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MARK A LAUER
6601 KOLL CENTER PARKWAY
SUITE 245
PLEASANTON, CA 94566

EXAMINER	
KUIPER, ERIC J	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/085,802	Applicant(s) PHILBRICK ET AL.	
	Examiner Eric Kuiper	Art Unit 2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27,29 and 30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *28* is/are allowed.

6)☒ Claim(s) *1-18,21-25, 29 and 30* is/are rejected.

7)☒ Claim(s) *19,20,26 and 27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-30 have been presented for examination.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 6, 7, 14 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Isfeld et al. (US 5,828,835, hereinafter Isfeld).

4. As per claim 1, Isfeld teaches a method of outputting a first TCP/IP packet and a second TCP/IP packet from a network interface device, the first TCP/IP packet and the second TCP/IP packet being output to a network (e.g. Isfeld, Abstract; col. 1, lines 20-27), comprising:

(a) storing first packet information on the network interface device (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29);

(b) pushing a first pointer to the first packet information onto a first transmit queue of the network interface device (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29);

(c) storing second packet information on the network interface device (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29);

(d) pushing a second pointer to the second packet information onto a second transmit queue of the network interface device (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29); and

(e) popping the second pointer off the second transmit queue and then popping the first pointer off the first transmit queue, the popped second pointer being used to locate the second packet information, the located second packet information then being output from the network interface device in the form of a second TCP/IP packet, the popped first pointer being used to locate the first packet information, the located first packet information being output from the network interface device in the form of a first TCP/IP packet such that the second TCP/IP packet is output from the network interface device and to the network before the first TCP/IP packet is output from the network interface device and to the network (e.g. Isfeld, col. 2, lines 54-67; col. 3, lines 1-15).

5. As per claim 2, Isfeld teaches the method of claim 1, wherein the first TCP/IP packet is a data packet, wherein the second TCP/IP packet is a control packet (e.g. Isfeld, col. 1, lines 60-67; col. 2, lines 1-3), and wherein the network interface device is coupled to a host computer by a parallel bus (e.g. Isfeld, col. 6, lines 13-17).

6. As per claim 3, Isfeld teaches the method of claim 1, wherein the first transmit queue contains pointers associated with a first set of packets, and wherein the second transmit queue contains pointers associated with a second set of packets, the second set of packets having transmission priority over the first set of packets (e.g. Isfeld, col. 2, lines 54-67; col. 3, lines 1-15).

7. As per claim 4, Isfeld teaches the method of claim 1, wherein the network interface device comprises a transmit sequencer, a memory, and MAC interface circuitry, the transmit sequencer causing the second packet information to be transferred from the memory to the MAC interface circuitry, the second TCP/IP packet being output from the network interface device through the MAC interface circuitry (e.g. Isfeld, col. 6, lines 36-44; col. 7, lines 24-27).

8. As per claim 6, Isfeld teaches the method of claim 1, wherein the first packet information includes a header portion and a data payload portion (e.g. Isfeld, col. 8, lines 50-54; col. 10, lines 44-47).

9. As per claim 7, Isfeld teaches the method of claim 1, wherein the first pointer is part of a buffer descriptor (e.g. Isfeld, col. 21, lines 21-29).

10. As per claim 14, Isfeld teaches a TCP/IP offload network interface device (e.g. Isfeld, Abstract; col. 1, lines 20-27), comprising:

a memory containing first packet information and second packet information (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29);

a processor that causes a first pointer to the first packet information to be pushed onto a first transmit queue before a second pointer to the second packet information is pushed onto a second transmit queue (e.g. Isfeld, col. 2, lines 54-67; col. 3, lines 1-15); and

a transmit mechanism that pops the second queue in preference to popping the first queue, the first transmit mechanism popping the second pointer off the second queue and outputting the second packet information from the network interface device in the form of a second TCP/IP packet, the transmit mechanism popping the first pointer off the first queue and outputting the first packet information from the network interface device in the form of a first TCP/IP packet, the transmit mechanism popping the second pointer from the second queue before popping the first pointer off the first queue, the second TCP/IP packet being output from the network interface device before the first TCP/IP packet is output from the network interface device (e.g. Isfeld, col. 2, lines 54-67; col. 3, lines 1-15).

11. As per claim 15, Isfeld teaches the TCP/IP offload network interface device of claim 14, wherein the first TCP/IP packet is a data packet, and wherein the second TCP/IP packet is a control packet (e.g. Isfeld, col. 1, lines 60-67; col. 2, lines 1-3).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 5, 9, 11 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isfeld et al. (US 5,828,835, hereinafter Isfeld) in view of Lakshman et al. (US 6,078,564, hereinafter Lakshman).

15. As per claim 5, Isfeld teaches the method of claim 1, wherein the pushing of (b) occurs before the pushing of (d) (e.g. Isfeld, col. 2, lines 54-67; col. 3, lines 1-15).

Isfeld fails to teach the method wherein the first TCP/IP packet is associated with a first TCP/IP connection, and wherein the second TCP/IP packet is associated with a second TCP/IP connection.

However, in a similar art, Lakshman teaches a network communications system that uses multiple transmit queues, one for control (ACK) packet pointers and one for data packet pointers, using a separate connection per transmit queue (e.g. Lakshman, col. 3, lines 26-33).

It would have been obvious to one skilled in the art at the time the invention was made to combine Lakshman with Isfeld because of the advantages of allowing separate packets to be associated with separate network connections. It is well known in the art that network communication systems very often include a large number of network connections. Allowing packets to be transmitted and received over various connections at various times is a standard feature for any communication network. The use of multiple network connections helps to eliminate network congestion that would occur when using only a single connection. Network

congestion can greatly slow down the speed and efficiency of packet transmission, often times leading to dropped or lost packets. Reducing or eliminating network congestion is advantageous in any computer network system.

16. As per claim 9, Isfeld teaches the method of claim 1, wherein the second TCP/IP packet is a control packet (e.g. Isfeld, col. 1, lines 60-67; col. 2, lines 1-3), but fails to teach the method wherein the second TCP/IP packet is a TCP ACK.

However, in a similar art, Lakshman teaches a network communications system that uses multiple transmit queues, one for control (ACK) packet pointers and one for data packet pointers, and the various uses of the ACK control packet (e.g. Lakshman, col. 4, lines 38-44, 53-59).

It would have been obvious to one skilled in the art at the time the invention was made to further combine Lakshman with Isfeld because of the benefits of using an acknowledgement (ACK) response in a communications network. The use of ACK responses further assists a communications network in reducing network congestion and informs the transmitter when a packet has been dropped. This increases the speed, efficiency and reliability of a network, all of which are beneficial to any communications network.

17. As per claim 11, Isfeld teaches the method of claim 1 wherein the first transmit queue is used for the transmission of TCP/IP data packets(e.g. Isfeld, col. 1, lines 60-67; col. 2, lines 1-3).

Isfeld fails to teach the method wherein the second transmit queue is used for the transmission of TCP ACKs, the second transmit queue being free of or substantially free of pointers to TCP/IP data packets.

However, in a similar art, Lakshman teaches a network communications system that uses multiple transmit queues, one for control (ACK) packet pointers and one for data packet pointers, each pointer type being placed into its own queue, leaving the other queues free of unnecessary types of information (e.g. Lakshman, col. 4, lines 53-59; Fig. 4)

It would have been obvious to one skilled in the art at the time the invention was made to combine Lakshman with Isfeld for similar reasons as stated above in regards to claim 9.

18. As per claim 16, Isfeld teaches the TCP/IP offload network interface device of claim 14, but fails to teach the method wherein the first TCP/IP packet is a data packet associated with a first TCP/IP connection and wherein the second TCP/IP packet is a TCP ACK associated with a second TCP/IP connection.

However, in a similar art Lakshman teaches a network communications system that uses multiple transmit queues, one for ACK packet pointers and one for data packet pointers, using a separate connection per transmit queue (e.g. Lakshman, col. 3, lines 26-33).

It would have been obvious to one skilled in the art at the time the invention was made to combine Lakshman with Isfeld for similar reasons as stated above in regards to claim 5.

19. As per claim 17, Isfeld and Lakshman teach the TCP/IP offload network interface device of claim 16, wherein the TCP/IP offload network interface device is operatively coupled to a host computer, the host computer executing a protocol processing stack (e.g. Isfeld, col. 8, lines 16-34).

20. As per claim 18, Isfeld and Lakshman teach the TCP/IP offload network interface device of claim 16, wherein the network interface device includes a second processor, the second processor executing a protocol processing stack, the second processor being part of the TCP/IP offload network interface device (e.g. Isfeld, col. 8, lines 16-34).

21. Claims 8, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isfeld et al. (US 5,828,835, hereinafter Isfeld) in view of Kapoor et al. (US 5,682,534, hereinafter Kapoor).

22. As per claim 8, Isfeld teaches the method of claim 1, but fails to teach the method further comprising:

receiving onto the network interface device from the network a third packet;

fast-path processing the third packet on the network interface device such that a data payload portion of the third packet is written into a destination memory without a network protocol stack performing substantial transport or substantial network layer protocol processing on the third packet;

receiving onto the network interface device from the network a fourth packet; and

slow-path processing the fourth packet such that at least a data payload portion of the fourth packet is written into the destination memory, the network protocol stack performing substantial transport and substantial network layer protocol processing on the fourth packet.

However, in a similar art, Kapoor teaches a network communication system that receives packets onto a network interface device and is able to perform both "fast-path" and "slow-path"

processing on the packet, depending on certain characteristics determined at the time the packet is received; the "fast-path" processing avoids protocol processing in both the network and transport layers, accelerating the packet through the device (e.g. Kapoor, col. 2, lines 33-49; col. 6, lines 7-19; Fig. 2B) and the "slow-path" processing processes the packet through all applicable layers of the protocol stack if it does not meet the defined requirements for "fast-path" processing (e.g. Kapoor, col. 5, lines 36-45).

It would have been obvious to one skilled in the art at the time the invention was made to combine Kapoor with Isfeld because of the advantages of allowing certain packets which do not need full protocol stack processing to avoid the unnecessary processing and be given a "fast-path" through the device. As Kapoor states, bypassing the unnecessary processing layers provides for significant performance gains (e.g. Kapoor, col. 2, lines 48-49). When the network device skips processing on each layer of the protocol stack, the packet passes through the device much faster and more efficiently. Only packets that need to be processed in each layer are pass through the "slow-path" which can greatly increase the speed and efficiency of network communication. This is beneficial in any computer network.

23. As per claim 12, Isfeld and Kapoor teach the method of claim 8, wherein the network protocol stack is executed by a processor, the processor being a part of the network interface device (e.g. Kapoor, col. 2, lines 33-43).

24. As per claim 13, Isfeld and Kapoor teach the method of claim 8, wherein the network protocol stack is executed by a processor, the processor being part of a host computer, the network interface device being coupled to the host computer (e.g. Kapoor, col. 2, lines 33-43).

25. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Isfeld et al. (US 5,828,835, hereinafter Isfeld) in view of Kapoor et al. (US 5,682,534, hereinafter Kapoor) as applied to claim 8 above, and further in view of Lakshman et al. (US 6,078,564, hereinafter Lakshman).

26. As per claim 10, Isfeld and Kapoor teach the method of claim 8, but fail to teach wherein the second TCP/IP packet is a TCP ACK.

However, in a similar art, Lakshman teaches a network communications system that uses multiple transmit queues, one for control (ACK) packet pointers and one for data packet pointers, and the various uses of the ACK control packet (e.g. Lakshman, col. 4, lines 38-44, 53-59).

It would have been obvious to one skilled in the art at the time the invention was made to further combine Lakshman with Isfeld because of the benefits of using an acknowledgement (ACK) response in a communications network. The use of ACK responses further assists a communications network in reducing network congestion and informs the transmitter when a packet has been dropped. This increases the speed, efficiency and reliability of a network, all of which are beneficial to any communications network.

27. Claims 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isfeld et al. (US 5,828,835, hereinafter Isfeld) in view of Kapoor et al. (US 5,682,534, hereinafter Kapoor) and further in view of Lakshman et al. (US 6,078,564, hereinafter Lakshman).

28. As per claim 21, Isfeld teaches a method for outputting a control packet from a protocol processing offload network interface device (PPONID), the PPONID being coupled to a network (e.g. Isfeld, Abstract; col. 1, lines 20-27), the method comprising:

receiving a first packet onto the PPONID from the network (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29);

receiving a second packet onto the PPONID from the network (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29);

pushing a first pointer to the first packet information onto a first transmit queue (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29);

in response to said receiving of the second packet pushing a second pointer to the second packet information onto a second transmit queue (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29);

popping the second transmit queue to retrieve the second pointer, and using the second pointer to retrieve the second packet information, and outputting the second packet information from the PPONID in the form of the control packet (e.g. Isfeld, col. 2, lines 54-67; col. 3, lines 1-15); and

popping the first transmit queue to retrieve the first pointer, and using the first pointer to retrieve the first packet information, and outputting the first packet information from the

PPONID in the form of a third packet, the control packet being output from the PPONID before the third packet (e.g. Isfeld, col. 2, lines 54-67; col. 3, lines 1-15).

Isfeld fails to teach the method wherein the control packet is an acknowledge (ACK) and the method comprising: slow-path processing the first packet such that a protocol processing stack performs substantial transport layer processing and substantial network layer processing on the first packet; fast-path processing the second packet on the PPONID such that the stack performs substantially no transport layer processing on the second packet and such that the stack performs substantially no network layer processing on the second packet.

However, in a similar art, Kapoor teaches a network communication system that receives packets onto a network interface device and is able to perform both "fast-path" and "slow-path" processing on the packet, depending on certain characteristics determined at the time the packet is received; the "fast-path" processing avoids protocol processing in both the network and transport layers, accelerating the packet through the device (e.g. Kapoor, col. 2, lines 33-49; col. 6, lines 7-19; Fig. 2B) and the "slow-path" processing processes the packet through all applicable layers of the protocol stack if it does not meet the defined requirements for "fast-path" processing (e.g. Kapoor, col. 5, lines 36-45).

Also, in a similar art, Lakshman teaches a network communications system that uses multiple transmit queues, one for control (ACK) packet pointers and one for data packet pointers, and the various uses of the ACK control packet (e.g. Lakshman, col. 4, lines 38-44, 53-59).

It would have been obvious to one skilled in the art at the time the invention was made to combine Kapoor and Lakshman with Isfeld because of the benefits of using ACK responses and allowing packets to be processed only in the protocol layers which are necessary for

transmission. The use of ACK responses further assists a communications network in reducing network congestion and informs the transmitter when a packet has been dropped. As Kapoor states, bypassing the unnecessary processing layers provides for significant performance gains (e.g. Kapoor, col. 2, lines 48-49). When the network device skips processing on each layer of the protocol stack, the packet passes through the device much faster and more efficiently. Only packets that need to be processed in each layer are pass through the "slow-path" which can greatly increase the speed and efficiency of network communication. All of these features are beneficial in any computer communications network.

29. As per claim 22, Isfeld, Kapoor and Lakshman teach the method of claim 21, wherein PPONID is coupled to a host computer (e.g. Isfeld, col. 6, lines 13-17), and wherein the second packet includes a data payload (e.g. Isfeld, col. 8, lines 50-544; col. 10, lines 44-47), the data payload being transferred from the PPONID and to the host, the ACK (e.g. Lakshman, col. 4, lines 38-44, 53-59) being output from the PPONID before any portion of the data payload is transferred to the host (e.g. Isfeld, col. 2, lines 54-67; col. 3, lines 1-15).

30. As per claim 23, Isfeld teaches a method for outputting a control packet from a network interface device, the network interface device being coupled to a network (e.g. Isfeld, Abstract; col. 1, lines 20-27), the method comprising:

receiving a first TCP/IP packet onto the network interface device from the network (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29);

receiving a second TCP/IP packet onto the network interface device from the network (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29);

pushing a first pointer to a third packet information onto a first transmit queue (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29);

in response to said receiving of the second TCP/IP packet pushing a second pointer to fourth packet information onto a second transmit queue (e.g. Isfeld, col. 2, lines 59-63; col. 3, lines 16-29);

popping the second transmit queue to retrieve the second pointer, and using the second pointer to retrieve the fourth packet information, and outputting the fourth packet information from the network interface device in the form of the control packet (e.g. Isfeld, col. 2, lines 54-67; col. 3, lines 1-15); and

popping the first transmit queue to retrieve the first pointer, and using the first pointer to retrieve the third packet information, and outputting the third packet information from the network interface device in the form of a third TCP/IP packet, the control packet being output from the network interface device before the third TCP/IP packet (e.g. Isfeld, col. 2, lines 54-67; col. 3, lines 1-15).

Isfeld fails to teach the control packet being a TCP ACK from a network device and the method comprising: slow-path processing the first TCP/IP packet such that a protocol processing stack performs substantial TCP layer processing and substantial IP layer processing on the first TCP/IP packet; fast-path processing the second TCP/IP packet on the network interface device such that the stack performs substantially no TCP layer processing on the second

TCP/IP packet and such that the stack performs substantially no IP layer processing on the second TCP/IP packet.

However, in a similar art, Kapoor teaches a network communication system that receives packets onto a network interface device and is able to perform both "fast-path" and "slow-path" processing on the packet, depending on certain characteristics determined at the time the packet is received; the "fast-path" processing avoids protocol processing in both the network and transport layers, accelerating the packet through the device (e.g. Kapoor, col. 2, lines 33-49; col. 6, lines 7-19; Fig. 2B) and the "slow-path" processing processes the packet through all applicable layers of the protocol stack if it does not meet the defined requirements for "fast-path" processing (e.g. Kapoor, col. 5, lines 36-45).

Also, in a similar art, Lakshman teaches a network communications system that uses multiple transmit queues, one for control (ACK) packet pointers and one for data packet pointers, and the various uses of the ACK control packet (e.g. Lakshman, col. 4, lines 38-44, 53-59).

It would have been obvious to one skilled in the art at the time the invention was made to combine Kapoor and Lakshman with Isfeld for similar reasons as stated above in regards to claim 21.

31. As per claim 24, Isfeld, Kapoor and Lakshman teach the method of claim 23, wherein the protocol processing stack executes on a host computer, the network interface device being coupled to the host computer (e.g. Isfeld, col. 8, lines 19-34).

32. As per claim 25, Isfeld, Kapoor and Lakshman teach the method of claim 23, wherein the protocol processing stack executes on a processor, the processor being part of the network interface device (e.g. Isfeld, col. 8, lines 19-34).

33. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kapoor et al. (US 5,682,534, hereinafter Kapoor) in view of Isfeld et al. (US 5,828,835, hereinafter Isfeld).

34. As per claim 29, Kapoor teaches a TCP/IP offload device, the TCP/IP offload device being coupled to a device that executes a protocol stack, wherein the TCP/IP offload device accelerates TCP and IP protocol processing of an incoming TCP/IP packet such that the stack performs substantially no TCP protocol processing on the TCP/IP packet and such that the stack performs substantially no IP protocol processing on the TCP/IP packet, and wherein a data portion of the TCP/IP packet is transferred from the TCP/IP offload device to the device that executes the protocol stack (e.g. Kapoor, col. 2, lines 33-49; col. 6, lines 7-19; Fig. 2B).

Kapoor fails to teach the TCP/IP offload device comprising: a first transmit queue containing pointers associated with a first set of packets; and a second transmit queue containing pointers associated with a second set of packets, wherein the second set of packets has transmission priority over the first set of packets.

However, in a similar art, Isfeld teaches a system that uses two separate transmit queues to store pointers to memory locations containing data packet information and control packet

information, and where the second transmit queue has transmission priority over the first transmit queue (e.g. Isfeld, col. 2, lines 54-67; col. 3, lines 1-15).

It would have been obvious to one skilled in the art at the time the invention was made to combine Isfeld with Kapoor because of the advantages of using separate transmit queues for storing pointers to different types of information. This allows the data information and control information to remain separated and provides for a variation in processing to be done to one queue and not the other. Keeping data and control information separate reduces the time spent for the processor to determine which type of information it is dealing with every time it needs to process a packet. This allows the processor to quickly and efficiently conduct the necessary processing and transmit the packet appropriately. The increase in speed and efficiency is a benefit in any computer network.

35. As per claim 30, Kapoor and Isfeld teach the TCP/IP offload device of claim 29, wherein the TCP/IP packet is received onto the TCP/IP offload device from a network, and wherein the TCP/IP offload device includes means for outputting the first set of packets and the second set of packets from the TCP/IP offload device and to the network (e.g. Kapoor, col. 2, lines 33-49; col. 6, lines 7-19).

Allowable Subject Matter

36. Claims 19, 20, 26 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As per claims 19 and 26, Prior Art does not teach the additional limitations of the use of a template header stored on a network interface device, the template header including TCP and IP fields, executing a finite state machine within the network interface device to fill in the TCP and IP fields to form a part of packet information.

As per claim 20, Prior Art does not teach the device of claim 19, including the limitation that the transmit finite state machine specifically does not include discrete TCP layer protocol processing and a discrete IP layer protocol processing, that the transmit finite state machine covers both TCP and IP protocol processing.

As per claim 27, Prior Art does not teach the method of claim 26, including the limitation that a transmit sequencer causes the TCP ACK and third TCP/IP packet to be output.

37. Claim 28 is allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Kuiper whose telephone number is (571) 272-0953. The examiner can normally be reached on Monday through Friday, 8:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (571) 272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eric Kuiper
17 February 2006

JOHN FOLLANSBEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100